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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/767,858	01/30/2004	Soon Hyung Hong	2236.0080000/JUK/SMW	2968

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EXAMINER	
NGAMPA, BRIGET P	

ART UNIT	PAPER NUMBER
1709	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/767,858	HONG ET AL.	
	Examiner	Art Unit	
	Briget P. Ngampa	1709	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *30 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) *7 and 8* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 10/767,858.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/14/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-6, drawn to a method, classified in class 427, subclass 249.16.

II. Claims 7 and 8, drawn to a product, classified in class 423, subclass 414

2. The inventions are distinct, each from the other because of the following reasons: Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another and materially different process such as liquid impregnation of the initial coating layer.

Restriction for examination purposes as indicated is proper because all these inventions listed in this action are independent or distinct for the reasons given above and there would be a serious search and examination burden if restriction were not required because one or more of the following reasons apply:

(a) the inventions have acquired a separate status in the art in view of their different classification;

(b) the inventions have acquired a separate status in the art due to their recognized divergent subject matter;

(c) the inventions require a different field of search (for example, searching different classes/subclasses or electronic resources, or employing different search queries);

(d) the prior art applicable to one invention would not likely be applicable to another invention;

(e) the inventions are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a invention to be examined even though the requirement may be traversed (37 CFR 1.143) **and (ii) identification of the claims encompassing the elected invention.**

The election of an invention may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected invention.

If claims are added after the election, applicant must indicate which of these claims are readable upon the elected invention.

Should applicant traverse on the ground that the inventions are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

3. During a telephone conversation with attorney Kim on 7/5/2007 a provisional election was made with traverse to prosecute the invention of group I, claims 1-6. Affirmation of this election must be made by applicant in replying to this Office action. Claims 7 and 8 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Galasso et al (U.S. patent number 4,425,407, hereafter '407) and further in view of Hanzawa et al (Publication number 2001/0051258 hereafter '258).

With respect to claim 1, '407 teach A method of making an oxidation protective multiple coating for a carbon/carbon composite [col 2-line56-58], the method comprising:

(a) forming an initial coating layer [col 2, lines 67-68] on the carbon/carbon composite by a pack cementation process [col 2, lines 64-67]; '407 further teaches that subsequent protective coatings may be applied [abst]

'407 does not teach:

(b) coating Si over the initial coating layer to form an Si-coated carbon/carbon composite; and

(c) heat-treating the si-coated carbon/carbon composite to impregnate the initial coating layer, and cracks in the initial coating layer, with Si; thereby forming a SiC layer and a Si layer.

'258 teaches that the molded product and Si are heated [0068, line 1-3] to impregnate the molded product with the molded silicon through the pores and form a Si-SiC material [0068, lines 6-17]. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used Si and heat to close the pores of the carbon/carbon composite because '258 teaches that it is the suitable process for closing pores on carbon/carbon composites.

With respect to claim 5, '407 teach the method of claim 1, it does not teach that the heat treatment in (c) is performed at a temperature of about 1400 °C to about 1600 °C and under a pressure of about 10 mTorr to about 1000 mTorr. ''258 teaches temperature of 1100°C -1400°C and a pressure of 0.1 to 10hPa [0068, lines 3-4] which corresponds to 75 mTorr – 7500 mTorr. It has been held that a prima facie case of obviousness exist where the claimed ranges "overlap or lie inside ranges disclosed by the prior art". Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have considered a prima facie case of obviousness because there is there is overlapping in ranges between the claimed range and the prior art. [In re Wertheim, 541 F.2d257, 191 USPQ 90 (CCPA 1976).

3. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Galasso et al (U.S. patent number 4,425,407, hereafter '407) and Hanzawa et al (Publication number 2001/0051258 hereafter '258) further in view of Holko (U.S.patent number 5,021,107, hereafter "107).

With respect to claims 3 and 4, '407 and '258 teach all the limitations of claim 1. '258 teach applying Si as a powder. It does not teach that the vehicle liquid used to facilitate the coating of Si over the initial coating layer in (b) is a volatile alcohol. '107 teaches that volatile carrier such as alcohol [col 5, lines 18-19] are used in applying powders of interlayer materials which may be Si [col 3, lines 61-64]. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have

used alcohol as a vehicle for coating the Si powder to the coated carbon carbon composite because '107 teaches that it is a suitable vehicle for coating Si powder.

4. Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Galasso et al (U.S. patent number 4,425,407, hereafter '407) and Hanzawa et al (Publication number 2001/0051258 hereafter '258) further in view of Rousseau (patent number 4,976,899, hereafter "899).

With respect to claim 2 and 6, '407 and '258 teach the method of claim 1, it does not teach oxidizing the Si layer at a temperature of 400 °C to about 800 °C to form an SiO2 film. '899 teach forming a protective SiO2 coating on SiC coated carbon/ carbon composites [col 3 lines 2-6] on the SiC at a temperature of 600 °C to about 1700 °C [col 3, lines 34-35]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have added a SiO2 film to the process of '407 because SiO2 film protect the preceding layer; and use the temperature range of '899 to slow the oxygen penetration in the composite core.

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422

F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 1-6 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims1-6 of copending Application No. 10767854 (hereafter '854) in view of Galasso et al. (Patent number 4,425,407, hereafter '407).

'854 claims all the features of the current claims except forming an initial coating layer by pack cementation process. '407 teaches forming an initial coating layer [col 2, lines 67-68] on the carbon/carbon composite by a pack cementation process [col 2, lines 64-67] to improve adhesion. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed an initial coating layer by pack cementation on the process of '854 because '407 teaches that it is a suitable process for a better adhesion.

This is a provisional obviousness-type double patenting rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Briget P. Ngampa whose telephone number is 571-270-1866. The examiner can normally be reached on M-F, 830-4:30PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

bpn

MICHAEL B. CLEVELAND
SUPERVISORY PATENT EXAMINER